Spatial scale and the geographical polarization of the American electorate

ABSTRACT: *In the large literature on the growing polarization of the American electorate and its representatives relatively little attention is paid to the spatial polarization of voters for the two parties at presidential elections. Bishop argued this has increased as the result of residential location decisions: Democratic Party supporters have increasingly moved to neighborhoods where others of that persuasion are already congregated, for example. His analyses at the county scale are geographically incommensurate with that argument, however; the lacuna is filled using precinct-level data for the entire United States for the 2008, 2012 and 2016 presidential elections. Multilevel modelling shows polarization at those elections was significantly greater at the precinct than the county, state and division scales. Change over the three elections at the precinct scale was probably associated with redistricting and reduced support from the Democratic Party by some groups.*

Keywords: polarization; scale; precincts; US; presidential elections

> America is polarized. Our political parties are highly polarized and the American electorate is highly polarized. … Political divisions in American politics are now deep and real. (Campbell, 2016, 1)

Campbell's introductory statement to his *Polarized: Making Sense of a Divided America* summarizes a substantial body of recent scholarship focusing on changes over recent decades (for example, Levendusky, 2009). One feature of Campbell's book, however, and of the large literature on which he draws, is that it almost entirely ignores one aspect of the contemporary trend – geographical polarization. His chapters on the empirical evidence sustaining his and others' central claims cover ideological orientations, issue preferences, and behavioural patterns but say nothing about the changing spatial patterning of the American electorate.

There is, however, considerable evidence that the American electorate has also become spatially more polarized in recent decades, with many areas becoming increasingly dominated – if not predominated – by one of the two main parties, notably at the state and county scales (Brunn et al., 2008; Morrill et al., 2011; Archer et al., 2014; Watrel et al., 2018). Several possible reasons for such polarization have been explored (initially by electoral geographers in Cox's, 1969, classic paper and followed up in his empirical studies: Johnston and Pattie, 2012.). They include (Johnston and Pattie, 2006): the classic neighbourhood effect, whereby social interaction within an area sees the dominant group there win over converts to its political attitudes and voting preferences; the development of a local political ethos that sustains one party much more than another; the intensity of activity by political parties aimed at mobilizing support and achieving high turnout of their supporters are elections; and migrant self-selection, whereby individuals and households with particular political persuasions and voting preferences choose to move to areas where similar people already live. All four may interact within an area as, for example, parties seek to realise the potential returns from changing local demographic structures.

Of those processes, considerable recent attention has been given to the role of migration in the geographic sorting of the American electorate with, for example, Cho et al. (2013) identifying relocation patterns that illustrate not only geographic sorting according to neighbourhood

characteristics but also the importance of local partisanship as determinants of some movers' chosen destinations – even in situations where that partisanship is not known but various clues suggest its nature (Gimpel and Hui, 2015).

The role of migration as a contributing clause to geographical polarization was brought to wider attention by Bishop (2009) whose book's subtitle – *Why the Clustering of Like-Minded Americans is Tearing Us Apart* – linked the ideological and behavioural polarization explicated by Campbell and others with an increased spatial segregation of the main groups in the electorate with similar opinions. Republican Party supporters, he argued, are increasingly clustering in places where Republican voters dominate, whereas Democratic Party supporters are increasingly congregating where its voters dominate the local electorate. Bishop's account, which is mainly anecdotal and journalistic in tone although he claims that work by his collaborator, Robert Cushing, a retired professor of sociology, used all of the 'several ways to measure segregation' (Bishop, 2009, 9) to demonstrate increased polarization at the county scale, may, as Cho et al. (2013, 857) express it, be 'sensationalized, it is also believable enough to cause one to take pause … [and] suggestive of a highly compelling story' that critiques (such as Fiorina and Abrams, 2008; Abrams and Fiorina, 2012) have not gainsaid.

Bishop's argument contains two main hypotheses: that geographical polarization of the American electorate, as illustrated by voting patterns at presidential elections, has increased over recent decades; and that this polarization has resulted from selective migration patterns. However, as Cho et al. (2013) note, his empirical study of that polarization, designed to test the first of the two hypotheses, was undertaken at the wrong spatial scale. Like other studies of polarization, the smallest spatial unit deployed in the analyses is the county (for example, Lang and Pearson-Merkowitz, 2015; Morrill and Webster, 2015; Scala et al., 2015), and yet Bishop's (2009, 40) argument regarding selective migration, of people with similar backgrounds and characteristics increasingly clustering together, was that:

> The country may be more diverse than ever coast to coast. But look around: our own streets are filled with people who live alike, think alike, and vote alike. This social transformation didn't happen by accident. We have built a country where everyone can choose the neighborhood (and church and news shows) most compatible with his or her lifestyle and beliefs. And we are living with the consequences of this segregation by way of life: pockets of like-minded citizens that have become so identically inbred that we don't know, can't understand and can barely conceive of "those people" who live just a few miles away.

The spatial scale that he is addressing – of streets, neighborhoods and people who live 'just a few miles away' – is smaller than that of the units analysed, counties, some of which have populations in the millions. He established, as have other studies (e.g. Johnston et al., 2016), that polarization is taking place, but not at the scale at which most people and households make their specific residential location decisions – the neighborhood.

His metric ?????

Firmer tests of his hypotheses therefore require analyses at smaller spatial scales than that of the county. Some case studies – such as Kinsella et al. (2015), Myers (2013) and Sussell (2013) – have identified polarization at the neighborhood level, and McKee concluded (2008, 106) that:

> Recent scholarship indicates that as Americans have become more mobile they have consciously chosen to relocate into communities with politically like-minded neighbours. … This kind of residential sorting reinforces political similarities within communities and as a result accentuates political differences across different communities

and others (e.g. Cho et al., 2013; Gimpel and Hui, 2015; Hood and McKee, 2010) have linked such polarization to migrant movements. But, largely reflecting the absence of data portraying voting

patterns at that scale for the country as a whole, there have been no studies establishing the intensity of polarization at the sub-county scale across the United States, let alone whether this has increased at recent elections. Using a recently-developed multi-scale measure of spatial polarization, this paper provides a first assessment of that local-scale polarization.

Hypothesis and data

As noted above, there are two hypotheses – that the American electorate has become geographically more polarized at the neighbourhood scale, and that this has been brought about by selective migration. If the first is falsified, then the second falls, so the goal here is to establish the veracity of the polarization argument. To do that, a bespoke data set has been assembled giving the number of votes for each candidate in each voting precinct within each county within each state at each of the 2008, 2012 and 2016 presidential elections. Given that the United States does not possess a central aggregating agency for precinct-level election data, and nor do many states, collection of precinct-level results for the 2012 and 2016 presidential elections required contacting the relevant electoral authorities in each state and county as needed. In most cases, state Secretaries of State or Election Boards provided state-wide precinct results, but several states required contacting each county's electoral authority independently, namely Colorado, Indiana, Michigan, Missouri, New Jersey, New York, and Pennsylvania. Kansas, Kentucky, Oregon, and West Virginia required county-specific contact for a minority of counties. Most electoral authorities provided results without charge via email or fax, but units such as Utah and many counties in Missouri required fees for access to their data. The Harvard Election Data Archive supplied precinct-level results for the 2008 presidential election.[1] Unfortunately, comparable data are not available for previous elections and longer-term trends cannot be analysed.

The number of precincts varied across the three elections. There were 186,371 in 2008 where at least one vote was cast, with a mean number of 702 votes (standard deviation 612); the maximum was 36,840 and the inter-quartile range 342-869. In 2012 there were 170,277 with a mean of 725, standard deviation 689, maximum 45,667 and an inter-quartile range of 348-886. For 2016 there was a mean of 780 (standard deviation 745) for the 168,023 precincts; the maximum was 44,292 and the inter-quartile range 365-957. For each precinct we calculated the percentage of the two-party (Republican plus Democratic) votes cast for the Democratic candidate to form the variable whose polarization we modelled.[2]

Using a multilevel measure of spatial segregation/polarization a recent analysis showed that at each presidential election from 1992 on the geography of support for the Democratic Party's candidates across the country's nine Census divisions was more polarized at each successive election (Johnston et al., 2016); that within those divisions, Democratic Party support was more polarized across the constituent states at each successive election; and that within states, Democratic Party support was more polarized across the constituent counties at each successive election – with these latter changes being statistically highly significant. That measure of polarization – the Median Odds Ratio (MOR) between the modelled percentages of support for Democratic Party candidates – is deployed here in the first analysis of its extent at the much finer-grained spatial scale of voting precincts, extending that earlier study to a fourth spatial scale.

[1] https://projects.iq.harvard.edu/eda/home

[2] It is, of course, possible that because of the MAUP issue the results that we obtain with this single realisation of a fine-scale spatial division of counties into precincts are outliers from the general pattern that might result from a large number of different realisations involving the same number of precincts with the same average population. As with a very large number of other studies using spatially-aggregated data we have to accept that risk while recognising that it is very unlikely.

Using a bespoke data set, therefore, this paper explores the intensity of polarization at recent US presidential elections at a spatial scale commensurate with the processes identified by several authors regarding that change. Although precinct boundaries are not necessarily drawn to correspond with neighborhoods, nevertheless their size is consistent with the local areas within which the polarization is assumed to be occurring. As such, it is the first nation-wide exploration of a hypothesis regarding the intensity of electoral polarization at that scale.

Modelling polarization

A number of different ways of measuring polarization is available of which the most popular is the index of dissimilarity, used in Glaeser and Ward's (2005) analysis of long-term trends in US electoral geography,[3] but because this index confounds systematic with stochastic variation in the allocation of individuals to areas it tends to over-estimate the intensity of polarization/segregation, especially in areas with relatively small populations (Carrington and Troske, 1997).

Modelling the intensity of polarization at each scale (division, state, county, precinct) at each of the three elections was thus undertaken using a bespoke system developed for analysing residential segregation at multiple scales which avoids those problems (Jones et al., 2015) and has been adapted for the study of the polarization of voting patterns (Johnston et al., 2016). This estimates the intensity of polarization at each scale, net of any polarization occurring at the larger scales, rather than its intensity at each scale independent of the others. This takes into account Duncan et al.'s (1961) observation that any measure of segregation-polarization intensity at a particular spatial scale necessarily incorporates that at any larger scales in which the units concerned are nested: a measure of polarization at the precinct scale incorporates the intensity at the county scale in the current context, for example; and a measure at the county scale incorporates the intensity at the state scale.

The nature of this scale-dependence of polarization is illustrated by the ideal-type examples in Figure 1. Each diagram shows a state divided into six counties (bounded by the solid lines), each of which is divided into four precincts. The numbers are the percentage of votes cast in each precinct for the Democratic Party candidate at an election. In the first state – the left-hand diagram – there is polarization at the county scale; Democratic Party supporters are concentrated in the three counties in the left-hand column. But there is no polarization at the precinct scale: within each county the Democratic Party gets the same percentage of the votes cast in each precinct.[4] Nevertheless, if a measure of polarization was calculated for the precincts alone it would be positive: there is polarization at that scale, but only because there is polarization at the larger, county, scale – within counties there is no polarization. In the second example (the central diagram) there is polarization at both scales: Democratic Party support is greater in the three counties in the left-hand column and is also greater in some precincts than others within each county. Finally, in the third example (the right-hand diagram) there is no polarization at the county scale – each of the six has the same percentage of Democrat supporters – but there is at the precinct scale within each county.

What is needed, therefore, is a measure of polarization at each scale, net of any polarization at the larger scales within which the spatial units being analysed are nested – in 2008 the 186,371

[3] Glaeser and Ward (2005) concluded that there was no long-term trend of increased polarization, but inspection of their results shows a clear increase from the mid-1970s on.

[4] Note that traditional analyses of polarization/segregation do not look at its intensity at each scale net of the scales in which it is nested, so that they would show polarization at the precinct as well as the county scale in this example. Duncan et al. (1961) showed that any of the traditional measures of segregation at the finer spatial scale would also incorporate that at the coarser scale too, hence recent work separating out the intensity of polarization/segregation at each scale (Jones et al., 2015).

precincts nested within the 3,143 counties, the 3,143 counties nested within the 51 state-equivalents, and the 51 state-equivalents nested within the nine census divisions. This avoids wrongly attributing the degree of polarization to the wrong scale – to the precinct scale rather than the county as in the first example in Figure 1, for example.

The measure used is the Median Odds Ratio (MOR), derived from a multilevel modelling of the variation in the distribution of Democratic candidate support across all spatial units at each of the four scales. The MOR values are derived from the modelled logit variances in those rates at each scale, and they have associated Credible Intervals (CIs) which provide empirical support for the parameter values: the 95% CIs are used here to convey the uncertainty associated with the estimated MOR values which, because they are based on a Bayesian estimation procedure, can be asymmetrical about those values.

The MOR values can be interpreted as follows. Take a pair of precincts within a county for which we have the modelled observed/expected rate and calculate the ratio between the larger and smaller of those two rates. Repeat this many times. The MOR is the median of all those calculated ratios, the average difference between any pair of precinct rates within a particular county – averaged across all counties. An MOR of 1.0 indicates no difference, therefore; the larger the MOR the larger the average difference (an MOR of 1.20 indicates that across all counties on average one precinct selected at random would have a modelled rate 20 per cent larger than that for another randomly-selected precinct) and the larger the MOR the greater the polarization at that scale, net of other scales. Further, because they result from statistical modelling, the CIs can be used to assess whether one MOR is statistically different from another – whether, for example, polarization is greater at the county than at the precinct scale at any one date, or whether polarization at the precinct scale is greater at one date than at another. It is particularly important to use a model-based procedure here as the fine-scale of the precinct data means the total vote in a precinct can be numerically small and standard measures of polarization are upwardly biased when this is the case (Carrington and Troske, 1997).

The specific form of the multilevel model (Jones, 1991) used in the analysis is as follows, with each year analysed separately:

$$
\begin{gathered}
PropDem_{jklm} \sim Binomial\left(TotalVote_{jklm}, \pi_{jklm}\right) \\
logit\left(\pi_{jk}\right) = \beta + g_m + f_{lm} + v_{klm} + u_{jklm} \\
g_m \sim N(0, \sigma_g^2) \\
f_{lm} \sim N(0, \sigma_f^2) \\
v_{jk} \sim N(0, \sigma_v^2) \\
u_{jklm} \sim N(0, \sigma_u^2) \\
Var\left(PropDem_{jklm} | \pi_{jklm}\right) = \frac{\pi_{jklm}\left(1 - \pi_{jklm}\right)}{TotalVote_{jklm}}
\end{gathered}
$$

Where $PropDem_{jklm}$ is the observed response variable, the proportion of voters in precinct *j* in county *k* in state *l* and division *m* that voted Democrat and $TotalVote$ is the denominator, the total number of Democrat plus Republican voters. The log of the odds of voting Democrat $(logit\left(\pi_{jklm}\right))$ is modelled as a function of a fixed effect so that β is the overall national average log-odds of voting Democrat. The random part of the model consists of a differential logit for each division (*g*) a differential logit for each state (*f*) within a division; each county (*v*) within the state and division; and each precinct (*u*) within a county etc. These logit differentials are assumed to come from a Normal distribution and are summarised by a variance term at each level so that σ_g^2 summarises the

between division differences while σ_f^2 summarises the within-division between-state variation. These four variances are our measures of polarization – the departure from evenness at one scale net of the other scale and also net of stochastic variation.

The stochastic variation is explicitly modelled at lowest level as a single variance term and is assumed to follow a Binomial distribution. In practice this model is fitted as a five-level model, the counties at level 3, and exactly the same set of units – the precincts – at level 1 and level 2; that is, each level 2 unit has exactly one level 1 unit. This views the aggregate proportions at level 2 as consisting of replicated binary responses for 'individuals' at level 1. This use of a pseudo-level is fully explained in Browne et al. (2005) and allows the separation of the variance into exact Binomial at level 1 and over-dispersion at any higher level so that the higher-level variances summarize differences between areas over and above those expected from stochastic variation generated by a varying denominator. The estimated higher-level variances are transformed to MORs by using the formula given in Larsen and Merlo (2005). All the models are estimated as Fully Bayesian models through MCMC simulation using the MLwiN software (Browne, 2017; Jones and Subramanian, 2017).

Results

MOR values have been obtained for each of the three elections at the four spatial scales: precinct, county, state and census division – the last three of which were used in the previous analyses of polarization over a longer time period. Using such a nested hierarchy means that the intensity of polarization at the precinct scale is identified net of polarization across the country's major regions (as represented by the census divisions), across the states within those regions (most of which have become more polarized over recent decades), and across the counties (also increasingly polarized at recent elections). This ensures that the reported polarization at the precinct scale is not simply a local reflection of polarization at larger scales.

The resulting MOR values with their associated CIs are shown in Table 1. Of the three scales analysed previously they show slightly increased polarization across the three elections at both the divisional and state scales. As their CIs overlap, however, those changes are not statistically significant, unsurprisingly so because of the relatively small number of cases, especially at the divisional scale. At the county scale, however, not only was polarization greater than at the two larger scales at each succeeding election but it also increased significantly – as indicated by the non-overlapping credible intervals in Table 1. Between the 2008 and 2016 elections, polarization of Democratic Party voters between counties within states and divisions increased by some 15 per cent, from 1.68 to 1.93; in the average (median) state the modelled observed/expected rate for percentage voting Democratic varied between any randomly-selected pair of counties by 93 per cent.

Within counties there was even greater polarization of Democratic Party voters at the precinct scale. With an MOR of 2.28 in 2008, polarization then was 36 per cent greater at the precinct than the county scale. The gap closed thereafter; slightly in 2012, when polarization was 34 per cent greater at the precinct scale (net of polarization at the county scale), and then in 2016 it was only 18 per cent larger. Further, after increasing between 2008 and 2012, and significantly so, polarization at the precinct scale declined between 2012 and 2016, so that at the latter date it was not significantly different from the situation in 2008.

At each of the three elections, therefore, the geography of support for the Democratic Party's presidential candidates was more polarized at the county scale than at the state scale, and more polarized still at the precinct scale within counties. Democratic Party voters – and by implication, because the percentage voting for Democratic candidates was calculated from the total

voting either Democrat or Republican only, Republican voters – were also concentrated in particular precincts within particular counties within particular states. That polarization did not change much over the eight years except at the county scale, for which it was significantly larger in 2016 than in 2008.

Within counties there was also intense polarization across the precincts, substantially as well as statistically significantly greater than at the county scale. Over the three elections that polarization became more intense at that local scale between 2008 and 2012, but then declined somewhat over the next inter-election period. This change may reflect the electoral situation; Trump's successful 2016 campaign for the presidency involved him winning substantial numbers of votes from some groups that have traditionally given strong support to Democratic Party candidates – such as the white working class in parts of the rust belt – and there was also lower turnout than usual among African-Americans, perhaps the most overwhelmingly single-partied group in American politics, giving strong support to the Democratic Party's candidates in recent decades. For example, using Bishop's chosen metric – a landslide if one party defeated the other by more than 20 percentage points – 40 per cent of the country's precincts did not return a landslide victory for either candidate in 2008. In 2012 that percentage fell to 35, but it increased again to 39 in 2016. As some voters shifted their allegiance from one party to another between 2012 and 2016, so fewer precincts were dominated by one of them.

Redistricting and local polarization: a hypothesis

One potential contingent circumstance that could influence these findings, and especially the increased polarization at the precinct scale between 2008 and 2012, is the redrawing of precinct boundaries. After the 2010 census results were published most states were redistricted for both federal and state elections and with new Congressional and State Assembly Districts in place many precinct boundaries were probably redrawn so that they nested within those new larger territories (many of which were gerrymandered, notably by the Republican Party: McGann et al., 2016). A prime consideration in redrawing those boundaries would have been ensuring that the new precincts were of approximately equal size to facilitate electoral administration. In addition, however, in some places at least the redrawing of precinct boundaries may have been part of a local gerrymandering exercise, which could have been the cause of the increased polarization between 2008 and 2012 – compared to the next four-year period when most District boundaries were unchanged.

We have no information on the number of precincts that were unchanged between any pair of elections but do know the number of counties where there was no change in the total number of precincts. On the assumption that where there was no change in the number this implied no change in their boundaries (it could be, of course, that the boundaries were changed but the number of precincts was not), then there was no change between 2008 and 2012 in the number of precincts in 47 per cent of counties. By contrast, there was no change in the number of precincts between 2012 and 2016 in 69 per cent of the counties, providing clear if circumstantial evidence that precinct boundary changes may in many places have been associated with the decennial redistricting.

As a check on whether the substantial volume of (assumed) redrawing of precinct boundaries, especially between 2008 and 2012, impacted on the intensity and direction of change in polarization, further analyses were undertaken for the two inter-election periods, 2008-2012 and 2012-2016. For each pair, separate analyses were conducted for those counties which experienced no change in the number of precincts between the two dates and for those where was change.

The MOR values for the two sets of precincts at the relevant two dates, at each period, are in Figure 2; the CIs were too small to be separately identified. The MORs for the counties with no change in the number of precincts (the red dots) are smaller than those for the counties where there was a change (the blue dots) at each date and those differences are all statistically significant. Most importantly for the current argument, the increase between 2008 and 2012 for the latter date was much greater than that for the former group. In counties where the number of precincts changed during that period when most states were redistricted the MOR increased from 2.36 to 2.49 (a statistically significant 5 per cent increase) whereas in those counties where there was no change in the number of precincts the increase, again statistically significant, was smaller (from 1.95 to 2.01 – a 3 per cent increase).

In the following inter-election period 2012-2016, post-redistricting in most states, there was a significant decline in the MOR for both groups of states (note that the counties in the two groups are not the same as those for the previous period), and it was greater in the counties where the number of precincts was changed. This may well be a consequence of the changing geography of support for the two parties' candidates, with Trump capturing votes in precincts that formerly gave strong support to Obama and hence somewhat diminishing the degree of polarization overall as voters in some precincts were more evenly divided between the two candidates in 2016 than they had been between their predecessors in 2012.

These analyses have not provided conclusive evidence that redistricting was the cause of greater polarization in some states than others as the result of the redrawing of precinct boundaries between 2008 and 2012, let alone that gerrymandering was involved in that redrawing in at least some places, because insufficient information is available to reach such a conclusion. There is circumstantial evidence supporting the case, however, suggesting an agenda for further research.

Conclusions

Strong evidence is being accumulated regarding the spatial polarization of the American electorate, as indicated by the geographical pattern of voting at presidential elections. Nationally, such evidence has been presented at relatively coarse spatial scales – division, state, and county. This strongly sustains the claim that more areas at all three of those scales are becoming dominated by those who voted for one of the two predominant parties. Divisions, states, and counties are more polarized in the first decades of the twenty-first than they were in the last decade of the twentieth century.

Those findings, based on a rigorous statistical procedure developed within a multilevel modelling framework, sustain arguments regarding growing spatial polarization of the US electorate, but the scales for which they have been analysed do not include the local at which the sorting processes are assumed to operate. Increased polarization has to date only been identified in a small number of case studies of individual places using data at finer spatial scales. The national precinct-level data assembled and analysed here allowed a first evaluation of the intensity of polarization at the last three presidential elections at a scale which approximates the locales wherein residential area choices are made. The data are not ideal for a full test of the polarization hypothesis as they do not cover sufficient elections with which to establish trends over a substantial period. Further, because precinct boundaries are redrawn – especially during periods of redistricting – they do not provide a consistent set of areas, thus precluding definitive conclusions regarding observed changes, which may reflect the consequence of those changed boundaries rather than any changes in residential choice patterns. Nevertheless, the data deployed here allow an enhanced appreciation of the intensity of fine-scale spatial polarization patterns at the national level, supplementing particular studies of individual places.

The clear conclusion to be drawn from these new analyses, additional to any drawn from previous studies, is that within the already-observed polarization of American voters at presidential elections at the county scale there is very substantial, statistically significant and greater polarization across the country's electoral precincts. Holding constant the intensity of segregation at three larger scales, polarization according to the MOR measure was some 35 per cent greater at the precinct than at the county scale at both 2008 and 2012 elections, for example. Precinct-level polarization also increased significantly between those two elections, and circumstantial evidence suggests that this was largely the result of the redrawing of precinct boundaries that characterised most states after the 2010 census. Between 2012 and 2016 polarization at the precinct scale declined to its 2008 level largely, it appears, because of Trump's relative success in a number of places where the Democrats had previously performed well. In most counties the favoured party in 2012 won majority support again in 2016 (Johnston et al., 2017) but within some of them switches in support at the precinct scale between the Democratic and Republican party candidates meant that the intensity of polarization declined slightly, returning to its 2008 level overall.

Two linked hypotheses – one relating to spatial pattern and the other to spatial process – have been promoted recently regarding the changing electoral geography of the United States, and evidence form an increasing number of tests has substantiated both. This paper has extended the findings regarding the pattern hypothesis at a spatial scale heretofore not analysed nationally, providing evidence of intense local polarization into locales consistent in size with the neighbourhoods that are the focus of the process hypothesis.

Spatial polarization is only one element of the changing nature of the American electorate, and the links between those various elements – ideological, behavioral and geographical – have yet to be fully explored. The new empirical findings presented here with regard to the intensity, scope and scales of geographical polarization add to the research agenda. That recent polarization, according to Campbell, has been a 'bottom-up' and not a 'top-down' phenomenon: as he expressed it, 'Polarization in the electorate begot polarization in the parties and polarization in the parties begot more polarization in the electorate (Campbell, 2016, 4). This process of structuration, although Campbell does not refer to it as such, thus has its origins in the communities and locales where people are politically socialised and mobilised, processes to which the parties have responded – by becoming more ideologically separate and distant from the median voter – and those responses have fed back into the local political milieu. Geography, as illustrated here, is a central feature of this ongoing polarization, therefore, and its role is part of the continuing agenda exploring its many parameters.

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Table 1.
The MOR values and their Credible Intervals (CIs)

	2008			2012			2016		
	LowCI	MOR	HiCI	LowCI	MOR	HiCI	LowCI	MOR	HiCI
Divisions	1.25	1.49	1.96	1.28	1.54	2.08	1.33	1.69	2.42
States	1.29	1.41	1.55	1.34	1.46	1.61	1.36	1.47	1.62
Counties	1.65	1.68	1.70	1.74	1.77	1.80	1.90	1.93	1.97
Precincts	2.27	2.28	2.28	2.38	2.38	2.39	2.26	2.27	2.27

Figure 1.
Three idealised exemplars of different forms of spatial polarization.

60	60	30	30
60	60	30	30
60	60	30	30
60	60	30	30
60	60	30	30
60	60	30	30

40	40	30	20
60	60	20	30
40	60	30	30
40	60	20	20
60	40	20	30
40	60	30	20

60	40	60	40
60	40	60	40
40	40	40	40
60	60	60	60
60	40	40	60
40	60	60	40

Figure 2. The MOR values at the precinct scale, with counties divided according to whether there was a change in the number of precincts there between the two elections.